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THE SPIDER GENUS *PARATHEUMA* BRYANT (ARANEAE, DESIDAE)

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ABSTRACT

The genus *Swainsia* Marples, 1964, is newly synonymized with *Paratheuma* Bryant, 1940. The previously unknown male of *P. insulana* (Banks) and female of *P. armata* (Marples) are described and illustrated. Habitat data and new distribution records are provided for these two species. The family Desidae is reported from the United States for the first time.

INTRODUCTION

Members of the genus *Paratheuma* are rare and poorly known spiders. The primary literature on them is limited to six papers (Banks 1902, 1903; Bryant 1940; Marples 1964; Roth and Brown 1975; Platnick 1977); the total number of specimens reported is only 19, although Roth and Brown (1975) apparently did not list all the specimens they collected, and Banks (1903) gave no data on number of specimens. This apparent rarity is no doubt a result of the restricted littoral and intertidal habitat of the spiders. Where found, they may be reasonably common, as indicated by the records presented below.

Only two species have hitherto been recognized as belonging to the genus (Platnick 1977): *Eutichurus insulanus* Banks, 1902, from Cuba, Haiti and Bermuda; and *Corteza interaesta* Roth and Brown, 1975, from the Gulf of California. To these may now be added a third species, *Swainsia armata* Marples, 1964, from Swains Island, American Samoa.

It is remarkable that these three congeneric species have been described not only in separate genera, but in separate families—*Eutichurus insulanus* in the Clubionidae (later transferred to the Gnaphosidae), *Corteza* in the Desidae, and *Swainsia* in the Agelenidae. It is quickly evident from the species' morphology that the only classical family in which they could be placed is the family Agelenidae. Their assignment to the Clubionidae and Gnaphosidae can be

regarded only as a blunder, even by the standards of the time, resulting from careless observation. The family Desidae, in which the genus is now placed, has received widespread acceptance only recently. Bryant (1940) established the genus *Paratheuma* for *E. insulanus* and *P. isolata*, incorrectly placing the genus in the Gnaphosidae, and including erroneous observations in the generic description. *Paratheuma isolata* has been transferred to the genus *Syrisca* (Clubionidae).

Genus *Paratheuma* Bryant

Paratheuma Bryant 1940:387, type species by original designation *Eutichurus insulanus* Banks. Roewer 1954:353. Platnick 1977:199.

Swainsia Marples 1964:403, type species by monotypy *Swainsia armata* Marples. Brignoli 1983:52. NEW SYNONYMY.

Corteza Roth and Brown 1975:2, type species by original designation and monotypy *Corteza interaesta* Roth and Brown. First synonymized with *Paratheuma* by Platnick 1977:199.

Description.—Color in life. Chelicerae orange brown to dark brown. Endites, labium and cephalic portion of carapace orange brown to brown, thoracic portion of carapace lighter. Sternum yellow orange to orange brown. Legs yellow to gray. Abdomen grayish yellow to greenish gray, often with small yellowish flecks or indistinct chevrons flanking cardiac region in posterior 2/3 of dorsum. Carapace may have dusky patches or lines along intercoxal grooves. In alcohol color may fade so that abdomen and legs are nearly uniform pale yellow, carapace yellow brown.

Total length of females 3.2-5.9 mm, males 3.1-5.2 mm. Carapace length females 1.35-2.50 mm, males 1.50-2.72 mm. Carapace width (maximum) females 1.00-2.00 mm, males 1.05-2.04 mm. Carapace low, cephalic region not much higher than thoracic, and sloping gradually posteriad. Cephalic region width about 2/3 of maximum carapace width or slightly less. Eye rows virtually straight, or with anterior row slightly procurved. Eyes subequal in size, AME slightly smaller than others. Width of posterior eye row about 70% of head width, anterior row slightly narrower. AME dark, others light.

Chelicerae stout, somewhat geniculate at base, divergent distally. Male chelicerae somewhat porrect and more divergent than in females. Cheliceral surface mostly clothed with abundant short setae (shorter in males) with setal bases somewhat enlarged. Promarginal cheliceral teeth in proximal half of fang groove only, two large teeth and one smaller. Retromarginal teeth extending full length of groove, 5-8 small teeth, largest tooth distal.

Endites rectangular, about 1.5 times as long as wide, bluntly pointed distally, with conspicuous scopula of medially curving hairs. Labium short and broad, rounded to slightly emarginate distally. Sternum slightly longer than broad to as broad as long, truncate, extending to posterior edge of coxae 4, narrowed and rounded posteriorly. Hind coxae separated by width of one coxa or slightly less.

Legs slender. Femoral lengths of all legs shorter than to as long as carapace length in females, shorter to slightly longer in males. Leg length formula 4-1-2-3. Leg spines few, weak.

Male palp slender, cymbium only slightly wider than distal width of tibia. Cymbium narrowed, finger-like distally, bulb occupying less than to more then half its length. Palp relatively simple, embolus and conductor chief parts visible in ventral view. Embolus slender, originating near middle of medial edge of bulb, or

somewhat more basally, curving forward to alveolar margin and back to form almost complete circle, ending on pointed conductor, which extends proximally to overlap tibia. Tibia with short to long disto-medial apophysis, and sometimes short distolateral apophysis as well.

Abdomen oval, unmodified, thickly covered with short, fine, appressed hairs. Posterior spinnerets elongate, up to half length of abdomen, extending beyond abdominal tip 0.5-1.0 mm; 2-segmented, segments about equal in length. Anterior spinnerets 2-segmented, distal segment very short, separated basally by about width of spinneret. Median spinnerets shorter, 1-segmented. Colulus large, conspicuous, heavily setose (colulus mistaken for a "lobe of spiracle" by Bryant, 1940, who described the genus as lacking a colulus). Tracheal spiracle broad, occupying about as much of abdominal width as pair of anterior spinnerets, separated from colulus by distance about equal to length of colulus.

Epigynum consisting of two small to large depressions, long axes varying from transverse to nearly longitudinal, with either edges only or entire surfaces sclerotized. Openings obvious or indistinct, ducts and receptacles appearing as two short to long longitudinal dark areas near medial edges of the depressions. Internal structures relatively simple (Fig. 6, see also Figs. 2, 4 in Platnick 1977). Overall epigynal size smallest in *P. insulana*, largest in *P. armata*.

Diagnosis.—The extension of the tracheae into the thorax, the absence of tarsal scopulae, the presence of a single row of tarsal trichobothria, and the genital structure separate the genus from other littoral genera of the family.

Paratheuma insulana (Banks)

Figs. 1, 4, 7, 10

Eutichurus insulanus Banks 1902:270 (female holotype from the Bermuda Islands, lost). Bonnet 1956:1845.

Paratheuma insulana (Banks), Bryant 1940;387; Roewer 1954:353; Platnick 1977:200.

Diagnosis.—The small size and oblique orientation of the epigynal depressions of the female, and the bifurcate, laterally projecting conductor tip of the male distinguish *P. insulana* from the other members of the genus.

Male.—Total length 3.5-5.0 mm, mean 3.86, SE 0.130. Carapace length 1.65-2.10 mm, mean 1.793, SE 0.039. Carapace width 1.15-1.55 mm, mean 1.290, SE 0.034 (ten specimens measured). Other measurements of one male: head width 0.85 mm, sternum length 1.0 mm, sternum width 1.0 mm, endite length 0.6 mm, labium length 0.35 mm, leg I—femur 1.75 mm, patella-tibia 2.25 mm, metatarsus-tarsus 2.45 mm, leg II—femur 1.75 mm, patella-tibia 2.1 mm, metatarsus-tarsus 2.4 mm, leg III—femur 1.55 mm, patella-tibia 1.9 mm, metatarsus-tarsus 2.35 mm, leg IV—femur 1.9 mm, patella-tibia 2.45 mm, metatarsus-tarsus 3.05 mm.

Bulb of palp smaller than that of other species, occupying less than 1/2 length of cymbium. Conductor bifurcate distally, with one branch extending laterally (Fig. 1).

Female.—Total length 3.3-5.9 mm, mean 4.32, SE 0.236. Carapace length 1.35-2.00 mm, mean 1.730, SE 0.058. Carapace width 1.00-1.45 mm, mean 1.238, SE 0.042 (ten specimens measured). Other measurements of one female: head width 0.9 mm, sternum length 0.95 mm, sternum width 0.9 mm, endite length 0.5 mm, labium length 0.35 mm, leg I—femur 1.55 mm, patella-tibia 2.0 mm, metatarsus-

Figs. 1-3.—Left pedipalps of male *Paratheuma* in ventral view: 1, *P. insulana* from Pigeon Key; 2, *P. interaesta* from Puerto Peñasco, Sonora, Mexico (holotype); 3, *P. armata* from Eniwetok, Marshall Islands.

tarsus 2.25 mm, leg II—femur 1.45 mm, patella-tibia 1.75 mm, metatarsus-tarsus 2.10 mm, leg III—femur 1.30 mm, patella-tibia 1.65 mm, metatarsus-tarsus 2.00 mm, leg IV—femur 1.70 mm, patella-tibia 2.20 mm, metatarsus-tarsus 2.75 mm.

Depressions of epigynum shorter and narrower than in other species, oriented obliquely. Internal genitalic structures are smaller than in others (Fig. 7).

Distribution.—Reported from Cuba (Bryant 1940), Haiti (Banks 1903), and the Bermudas (Banks 1902). Also known from the Florida Keys, Monroe Co., Florida, USA, Key Largo to West Summerland Key.

Habitat.—All specimens for which habitat data are available were collected among coral rubble (sometimes buried under plant detritus) above and below high water mark on sea beaches.

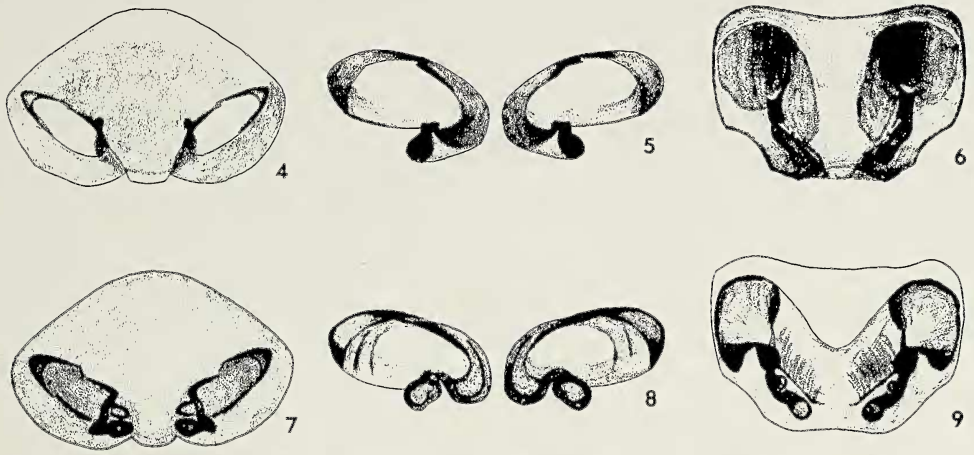
Material examined.—FLORIDA; *Monroe Co.*, Key Largo, 30 Dec. 1984, (J. W. Berry), 1 male, 2 females; Pigeon Key, 12 Mar. 1981, (J. W. Berry), 5 males, 5 females, 13 immatures, 25-28 Dec. 1984, (J. W. Berry), 1 male, 8 females, 63 immatures, 14 Mar. 1985, (J. W. Berry), 6 males, 7 females; Big Pine Key, 18 June 1965, 1 female, 5 immatures, in tidal litter, (W. Suter-FMNH), 28-29 Dec. 1984, (J. W. Berry), 1 female, 1 immature; West Summerland Key, 28 Dec. 1984, (J. W. Berry), 2 males.

Paratheuma interaesta (Roth and Brown)
Figs. 2, 5, 8, 10

Corteza interaesta Roth and Brown 1975:3 (male holotype and female paratype from Pelican Point, Sonora, Mexico, in the American Museum of Natural History, examined).
Paratheuma interaesta: Platnick 1977:200.

Diagnosis.—The intermediate size of the genitalia of both sexes, transversely oriented main axis of the epigynal depressions of the female, and short tibial apophysis and simply pointed conductor of the male distinguish this species from the other two.

No additional information is available for this species, except for the collection of an immature specimen at the type locality, by Beatty, on 28 July 1962. The male palp and female epigynum are illustrated (Figs. 2, 5, 8) for comparison with the other species.



Figs. 4-9.—Epigyna of female *Paratheuma*: 4-6, ventral views; 7-9, dorsal views, cleared; 4, 7, *P. insulana* from Pigeon Key; 5, 8, *P. interaesta* from Puerto Peñasco, Sonora, Mexico (paratype); 6, 9, *P. armata* from Eniwetok.

Material examined.—MEXICO: SONORA; Norse Beach, Pelican Point, 27 March 1969, (V. Roth), 1 male, 1 female (holotype and paratype), 28 July 1962, (J. A. Beatty), 1 female, 1 immature.

Paratheuma armata (Marples), new combination
Figs. 3, 6, 9, 11

Swainsia armata Marples 1964:403 (male holotype from Swains Island, American Samoa, in Bishop Museum, Honolulu, examined). Brignoli 1983:521.

Diagnosis.—The relatively large epigynum of the female, which has large round depressions with the axis of depression plus ducts nearly longitudinal, and the very long medial and short lateral apophyses of the male palp clearly separate this species from *P. interaesta* and *P. insulana*.

Male.—Total length 3.1-3.8 mm, mean 3.45, SE 0.146. Carapace length 1.50-1.65 mm, mean 1.590, SE 0.026. Carapace width 1.05-1.25 mm, mean 1.180, SE 0.033 (five specimens measured). Other measurements of one male: head width 0.80 mm, sternum length 0.85 mm, sternum width 0.85 mm, endite length 0.50 mm, labium length 0.25 mm, leg I—femur 1.65 mm, patella-tibia 2.00 mm, metatarsus-tarsus 2.25 mm, leg II—femur 1.63 mm, patella-tibia 1.85 mm, metatarsus-tarsus 2.10 mm, leg III—femur 1.50 mm, patella-tibia 1.65 mm, metatarsus-tarsus 2.05 mm, leg IV—femur 1.75 mm, patella-tibia 2.10 mm, metatarsus-tarsus 2.60 mm.

Bulb of palp (Fig. 3) larger than in other species, occupying more than half length of cymbium and, when flexed, overlapping tibia by almost half length of cymbium; short, broad, collar-like lateral apophysis is present.

Female.—Total length 3.5-5.0 mm, mean 4.08, SE 0.198. Carapace length 1.50-1.90 mm, mean 1.658, SE 0.058. Carapace width 1.10-1.40 mm, mean 1.24, SE 0.048 (six specimens measured). Other measurements of one female: head width 1.05 mm, sternum length 1.0 mm, sternum width 0.95 mm, endite length 0.60 mm, labium length 0.35 mm, leg I—femur 1.70 mm, patella-tibia 2.15 mm, metatarsus-tarsus 2.30 mm, leg II—femur 1.65 mm, patella-tibia 2.00 mm,

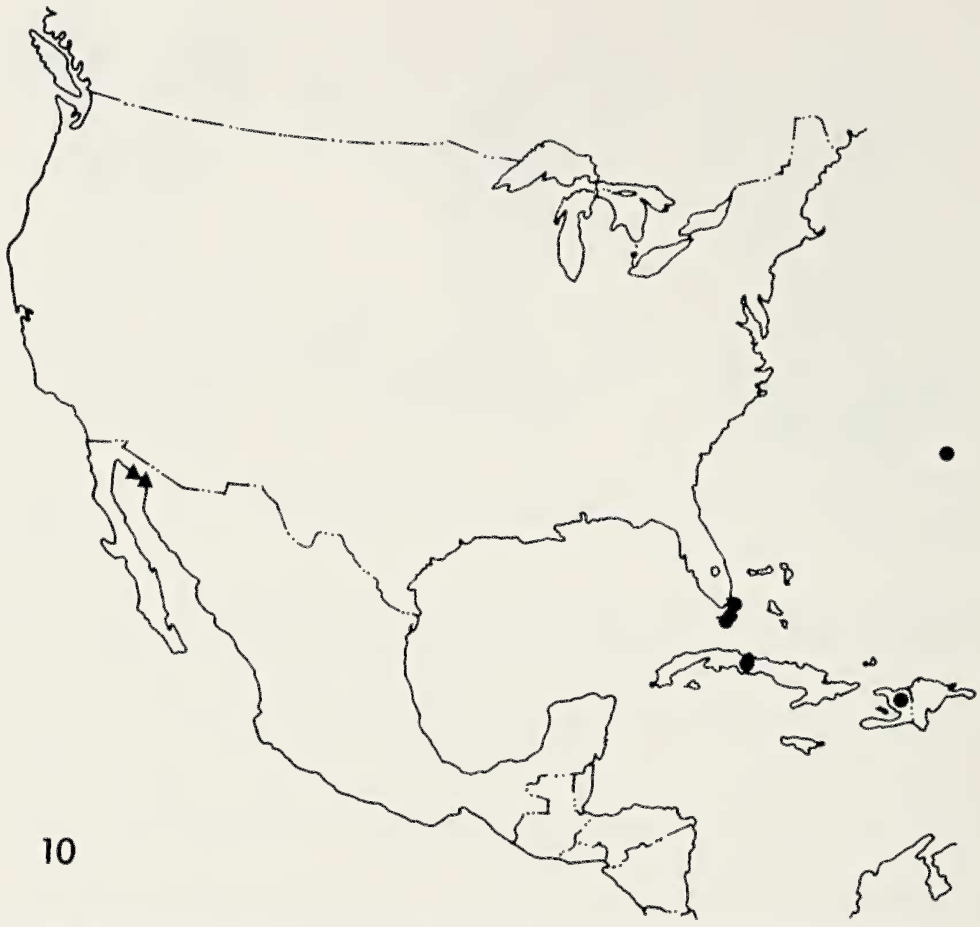


Fig. 10.—Distribution of *Paratheuma insulana* (circles) and *Paratheuma interaesta* (triangles).

metatarsus-tarsus 2.35 mm, leg III—femur 1.55 mm, patella-tibia 1.85 mm, metatarsus-tarsus 2.10 mm, leg IV—femur 1.90 mm, patella-tibia 2.35 mm, metatarsus-tarsus 2.75 mm.

Epigynum (Fig. 6) much larger than in other species, about 1 mm broad by 2/3 mm long, occupying entire width of area between book lungs, and most of distance from base of pedicel to epigastric groove. Depressions broader, more widely separated than in other species; axis of depressions plus ducts almost parallel with midline. Entire depression, rather than edges only, sclerotized. Internal genitalic structures (Fig. 9) more extensive than in other species.

Distribution.—From American Samoa to the Marshall Islands and western Caroline Islands (Fig. 11).

Habitat.—All specimens for which data are available were taken among broken coral or other beach rubble near the upper edge of the drift line on sea beaches.

Material examined.—AMERICAN SAMOA: *Swains Island*, 20 Aug. 1940, (E. C. Zimmerman), 1 male (holotype, BISH). MARSHALL ISLANDS: *Eniwetok Atoll*, 9 June 1969, (J. W. Berry), 2 immature, 16 July 1968, (J. W. Berry and J. A. Beatty), 1 male, 1 female, 10 immature (SIU); *Kwajalein Atoll*, 8 Aug. 1969, (J. W. Berry), 6 immature (SIU); *Majuro Atoll*, 1 Aug. 1969, (J. W. Berry), 3 female, 12 immature, 31 July 1969, (J. W. Berry), 1 immature (SIU). CAROLINE ISLANDS: PALAU; *Kayangel Atoll*, 23 May 1973, (J. W. Berry and E. Berry), 1 male, 1 female, 3

Fig. 11.—Distribution of *Paratheuma armata*.

immature (SIU); *Palau District*, Pulo Anna Isl., 7 Apr. 1973, (J. W. Berry and E. Berry), 1 male, 1 female, 6 immature (SIU), Sonsorol Isl., 10 Apr. 1973, (J. W. Berry and E. Berry), 1 male, 4 immature; YAP, 11 May 1980, (J. W. Berry), 1 male, 16 immature (SIU), *Ulithi Atoll*, 2 May 1980, (J. W. Berry and E. Berry), 1 male, 1 female (SIU).

DISCUSSION

The habitat, general appearance, and specific structures such as the genitalia, spinnerets, colulus, and tracheal system clearly place *Swainsia armata* with the other members of the genus *Paratheuma*. The taxonomic misplacement of *Paratheuma* undoubtedly was the primary reason for its being overlooked by the authors of the synonymous genera. Lack of definite locality or habitat data account for the rarity of *P. insulana* and *P. armata* in collections, as both are rather common to abundant in suitable habitats.

Although no specific collecting locality was given for the holotype of *P. insulana*, some information can be derived from the name of the collector, W. G. VanName, and the apparent date, May 1901. VanName was a specialist in tunicates and isopods, and collected at several specific localities in the Bermudas in May 1901. These localities are listed by him (VanName 1902) and, should it become desirable to restrict the type locality, one of them should probably be chosen.

Specimens of *P. insulana* and *P. armata* will be deposited in the collections of the American Museum of Natural History, New York, New York, the Museum of

Comparative Zoology, Cambridge, Massachusetts, and the Bishop Museum, Honolulu, Hawaii, (BISH). The remainder of the material will be kept in the Research Museum of the Department of Zoology, Southern Illinois University at Carbondale, Carbondale, Illinois, (SIU), and the Department of Biological Sciences, Butler University, Indianapolis, Indiana, (BU). The abbreviation FMNH was used for the Field Museum of Natural History.

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